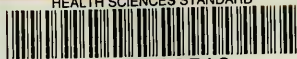


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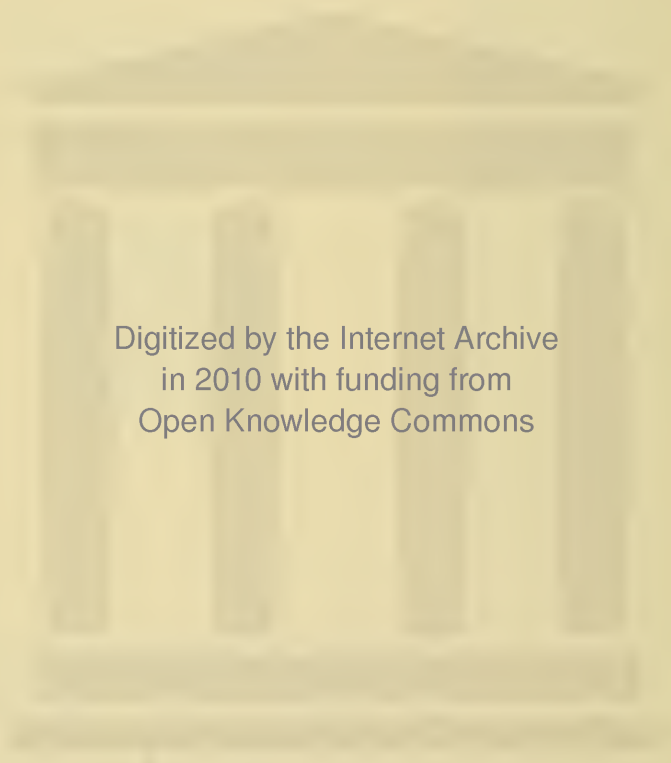
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A BUREAU  
OF  
CHILD HYGIENE

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CO-OPERATIVE STUDIES AND EXPERIMENTS

BY

THE DEPARTMENT OF HEALTH  
OF THE CITY OF NEW YORK

AND

THE BUREAU OF MUNICIPAL RESEARCH

Questions and information from any community will be welcomed with respect to the two subjects dealt with—the medical examination of school children and the instruction of mothers in the care of babies

BUREAU OF MUNICIPAL RESEARCH

261 BROADWAY

September, 1908



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An "Adenoid Party"; Before Operation. Mothers and Children Waiting at Good Samaritan Dispensary







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## FOREWORD

By the Commissioner of Health

From an economic as well as a humanitarian point of view, there can be no more valuable service rendered to humanity than in the preservation of the health of children. In the prevention of premature death and the promotion of normal life, health and happiness, no work can be of greater importance than that which concerns itself with children. The department of health has long, through its several activities, come into close and intimate contact with the children of the city. Owing, however, to a division of forces, the work has not proved as constructively efficient as could be desired.

A series of investigations has shown that the desired end can be more readily reached by the grouping of all the activities relating to the health of children under one division or bureau. The department of health has therefore established a bureau of child hygiene, a step which I look upon as potentially one of the most important in the history of preventive medicine.

The object of medical supervision over school children is two-fold: first, to prevent the spread of contagious diseases; second, the correction of physical abnormalities, effecting, among its important results, an educational economy to the state by placing the child in a physical condition where mental advancement is possible.

The manner in which the work has now been organized will mean a saving of several millions of dollars annually from the standpoint of economy alone, to say nothing of the immeasurable gain in the health of the children of this city.

THOMAS DARLINGTON, M. D.







## INTRODUCTION

In the creation of a division of child hygiene, the department of health of New York City has made an important addition to the program of preventive medicine. It is the most comprehensive plan yet put into operation by an American city to promote the health of children at all ages, from birth through the period of compulsory school attendance. The instruction of mothers in the care of babies, the regulation of midwifery, the regulation of the conditions under which babies may be boarded out, medical supervision of school children for both contagious diseases and non-contagious physical defects and the physical examination of children applying for employment permits, are the principal activities now outlined. The methods to be employed are mainly **educational**,—the education of mothers in the proper feeding and care of children in their first years, the education of parents to see the necessity for healthful home conditions and for medical or surgical treatment of physical defects when reported to them by medical inspectors and the education of teachers to an alert observation of the physical needs of their pupils. The department has already successfully maintained for some years a hospital and dispensary for contagious eye diseases, a large proportion of whose cases are school children.

The possibilities of such a division, progressively and efficiently administered, are beyond prophecy. A marked reduction in infant mortality, a higher level of health and vitality among children who live and greater efficiency of the school system due to the increased ability of children to benefit by their instruction,—not merely the application of remedies, but the discovery of the causes and methods of prevention of physical defects and low vitality,—these direct results may reasonably be expected and demanded. More remote and less demonstrable results may be hoped for in the way of increased industrial efficiency, of correspondingly decreased poverty and dependency and of decreased truancy and delinquency that now too often lead to wasted or even criminal lives.



The establishment of the division of child hygiene\* followed upon a series of co-operative studies and experiments by the department of health and the Bureau of Municipal Research. A study, conducted in the spring of 1908, of the prevailing methods and results in the examination of school children for non-contagious defects, demonstrated clearly that the **accuracy of the examinations was open to serious question**, and that **no adequate methods had been worked out for securing the treatment of children discovered to be defective**. Inspectors examining in the same schools rendered reports differing as widely as by 100% in the number of children found defective: while the parents notified that their children required medical attention only 8% reported any action. It was thus made evident that more effective methods of supervision and of follow-up must be devised.

To determine to what extent action on the part of parents could be obtained by personal interview and explanation, an experiment in three schools was tried covering the last six weeks of the school year 1907-1908. The parents who did not respond promptly to the department's customary postal notification that their children needed treatment were interviewed either at school or at home, with the result that **over 95% either took action or requested the department's nurses to act for them**. **In three fourths of the cases only one interview was necessary**; while the cost in nurse's service per pupil treated was only about sixty cents. Even this figure could be considerably lowered in well-established work.

A second experiment, during the summer of 1908, was concerned with the care of babies. Instead of, as previously, a large corps of inspectors and a small number of nurses engaged in a house to house visitation for sick children under two years of age, the department of health employed a large staff of nurses and a few inspectors, the former visiting the homes from which births were reported and instructing mothers in the care of their babies, the latter visiting sick babies referred by nurses or others and conducting educational lectures and instructions in vacation schools, playgrounds and recreation centres. **The results were a substantial improvement in administrative control and efficiency and a strengthened**

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\* By resolution of the board of health, August 19, 1908.



conviction that the problem of infant mortality is fundamentally educational and is therefore not merely a summer problem but demands an all the year round service. A perceptible, though on the whole not a marked decrease in the deaths of infants occurred, attributable in part at least to the summer campaign by the department of health and by many public and private agencies in alliance with it, whose work was this year especially active. The increased activity of the department of health during the last few years in inspecting the milk supply may also have contributed to the result.

These conclusions were held sufficient to warrant the establishment of a new division or bureau. Many problems relating to the health of children of course remained untouched by the experiments, such as the vexed questions of free meals and free eye-glasses at school and free treatment generally. These, so far as they come within the field of the new organization, are for it to solve on the basis of its experience.

No apology is offered for presenting plans and purposes as yet unachieved. As plans only, they may prove suggestive to other communities facing similar problems. But more important than that, the account in the following pages describes, in a concrete instance, the method of intelligent self-criticism and experiment which alone enables a public department to keep its service abreast of public needs.



# PHYSICAL EXAMINATION OF SCHOOL CHILDREN

## Beginnings in New York City

**Beginnings** In 1903, inspectors of the department of health examined about 1,000 children for refractive errors of vision and for orthopedic defects. Nearly one third were found to have spinal curvature, and about the same proportion to have defective vision. Additional vision tests were made in the autumn of 1904, some 12,000 children being examined, of whom over 25% were reported defective. These results indicated clearly enough the need for systematic and thorough physical examination. In April, 1905, therefore, the department of health extended its work, examinations being made for the following defects: malnutrition, diseased anterior cervical glands, diseased posterior cervical glands, chorea, cardiac disease, pulmonary disease, skin disease, deformity of spine, deformity of chest, deformity of extremities, defective vision, defective hearing, obstructed nasal breathing, defective teeth, deformed palate, hypertrophied tonsils, posterior nasal growth and defective mentality. This classification remained with few changes until recently.

**Growth** During 1905, some 55,000 children were examined, of whom over 33,000 or 60.6% were pronounced to be in need of treatment. Each year since 1905, an increased number of examinations has been made, as may be seen from the following table:

Table 1

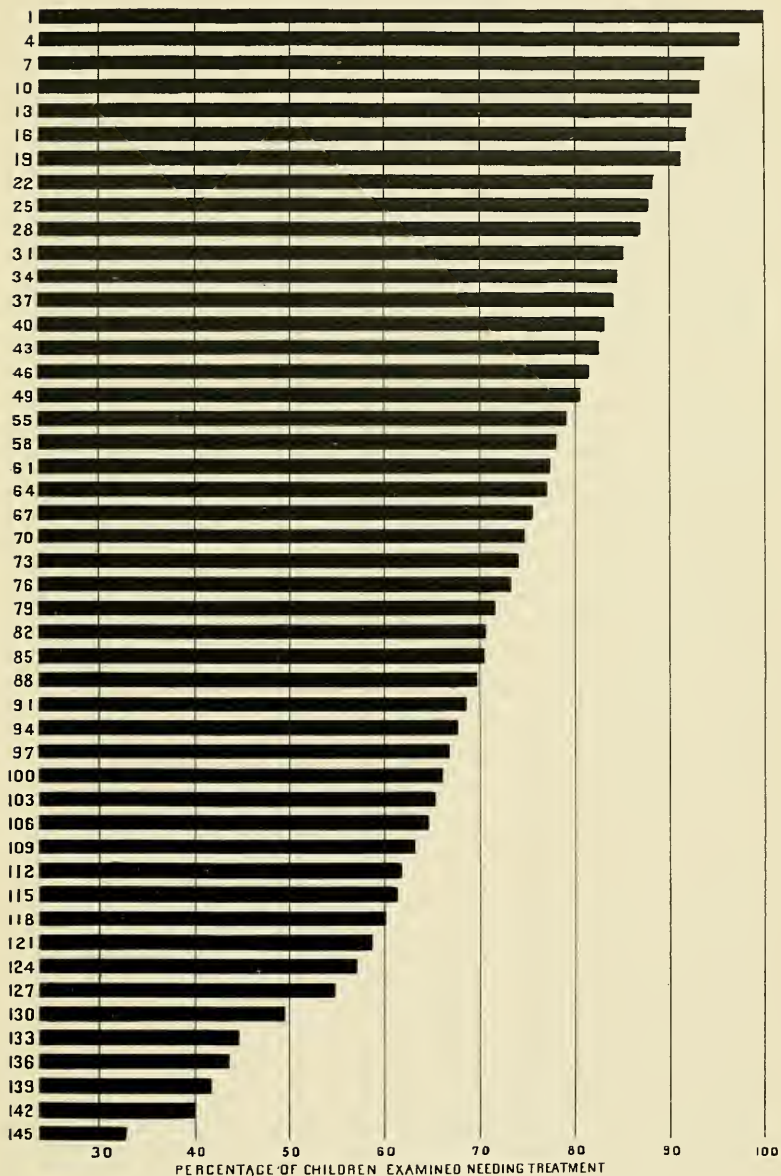
## PHYSICAL EXAMINATIONS OF SCHOOL CHILDREN

1905 - June, 1908

Borough	1905	1906	1907	1908 6 mos.	Total
Manhattan	55,332	79,085	141,908	59,426	335,751
Bronx	.....	.....	10,943	12,866	23,809
Brooklyn	.....	.....	69,165	62,615	131,780
Queens	.....	.....	.....	.....	.....
Richmond	.....	.....	438	26	464
New York City	55,332	79,085	222,454	134,933	491,804



DIAGRAM I - SHOWING VARIATIONS AMONG MEDICAL INSPECTORS IN  
FINDING PHYSICAL DEFECTS  
MANHATTAN - ALL SCHOOLS









**Notification  
of parents**

At the outset, the examinations were in the nature rather of an investigation than a branch of work intended to bring about practical results in the way of treatment. From the start, however, the evidence derived from the examinations all pointed to the same conclusion, viz., **that a large proportion of school children were suffering from remediable physical defects.** It immediately became clear that examination which did not in some way lead to treatment was futile. The department of health accordingly adopted a plan for notifying the parents of children examined in regard to defects needing treatment. At first the notification was enclosed in an envelope and taken home by the child. Later, a reply postal card was employed, the reply being intended to provide the physician consulted by the parent with the means of informing the department of health as to the treatment given. This method has been used up to the present time.

**Progress in  
method**

In 1907, instead of recording on a separate card each examination and re-examination, a single card was substituted providing space for the record of two examinations every year of the child's school life. These cards were not intended to be forwarded to the office of the department of health, as were the former single records. After being summarized by the medical inspector for the purposes of reporting, they were left in the schools, usually with the individual teachers. The intention was that by accompanying the children from one school and grade to another they should at any time supply teachers with information as to the physical condition of their pupils. These are the only innovations of importance since 1905.

## **Organization and Supervision**

**General  
organization**

The medical examination of school children, including that for non-contagious defects, has always been a part of the work carried on in each borough by the division of contagious diseases, under the chief medical inspector. Under the organization hitherto prevailing in the department of health, these officials have had no



direct dealing with one another. Each reported to the assistant sanitary superintendent of his borough, who in turn was responsible to the sanitary superintendent of the greater city. The only means of unifying the practice throughout the city has thus been through the sanitary superintendent, who, however, is responsible in the same way for most of the other activities of the department. The organization has been weak because of the lack of a single chief official, who should be a specialist, in charge of the work throughout the city.

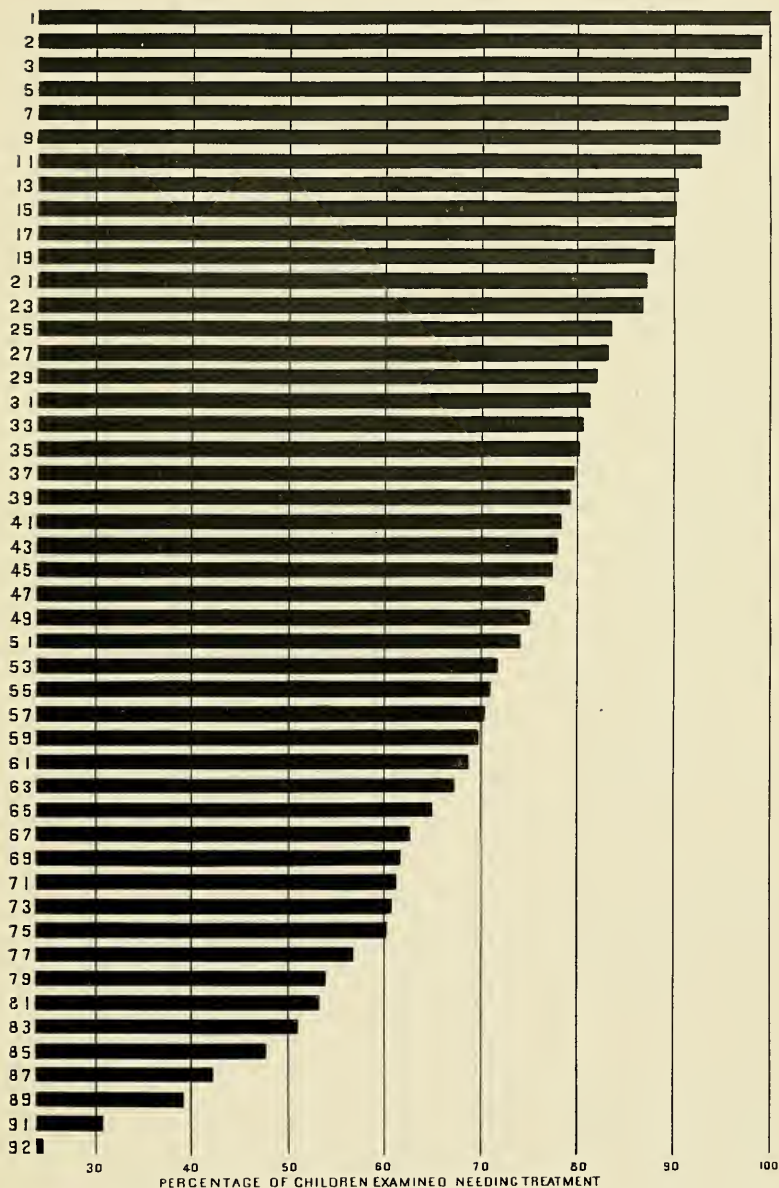
**Supervision** In Manhattan an attempt was made to develop a system of supervising school inspectors. Here, during the past year, three inspectors were assigned to exercise, subject to the chief medical inspector, supervision over nearly 100 inspectors. The trial was not comprehensive enough to establish any conclusions. It is unnecessary, however, to do more than point out the impossibility of adequate administrative control over a large staff of medical inspectors without supervising inspectors to assist the chief official.

**Corps of medical inspectors** Until 1907, the medical examination of school children and the district inspection of contagious diseases were performed by different corps of inspectors. In 1907, the system was tried of combining all work in the same staff, each inspector performing both school and district work. In Manhattan, an increased number of visits followed; but reports from Brooklyn were not favorable. On the whole, the experience of the department seems to show that the more closely the examination of school children is allied with the general inspection of contagious diseases, the more likely it is to be slighted in favor of the latter. The medical supervision of school children has now come to be mainly concerned with non-contagious defects, particularly in their bearing upon education. This is a distinct type of work, and requires special training if it is to reach a maximum of efficiency; it has as much claim to be administered through a special corps as, for example, the administration of antitoxin.

The steps necessary, therefore, to a proper organization of the service were:



DIAGRAM 2 — SHOWING VARIATIONS AMONG MEDICAL INSPECTORS  
IN FINDING PHYSICAL DEFECTS  
BROOKLYN — ALL SCHOOLS









- (1) The separation of school work from the general inspection of contagious diseases, and its performance by a separate corps of inspectors.
- (2) The designation or appointment of a single chief official, with jurisdiction over the entire city, and responsible to the sanitary superintendent for developing and putting into effect a constructive policy and for co-ordinating the service in the different boroughs.
- (3) The designation of a certain number of inspectors to act as supervisors, reporting to the inspector in charge of each borough, and he in turn to the chief of the division.

## Study of Methods and Results

**Study of methods and results**      Early in 1908, a study of the prevailing methods and results was undertaken by the Bureau of Municipal Research in co-operation with the department of health. The inquiry was conducted by the Bureau, while the department of health assigned inspectors and nurses as required, and rendered available all its records and reports. The plan was to scrutinize the methods employed and the results obtained, with a view to devising improvements. For this purpose, the inquiry concerned itself first with the accuracy of the physical examinations, and secondly with the extent of the treatment actually provided.

**Period covered**      The period selected for special study was the latest available—the first term of the school year 1907-08, covering approximately the interval from Sept. 1, 1907 to Jan. 31, 1908, when 178,746 children were examined.

**Accuracy of examinations**      If physical examinations are to be of value, they must be accurately made; they must neither fail to find defects that are actually present, nor alarm parents unnecessarily by reporting defects which do not



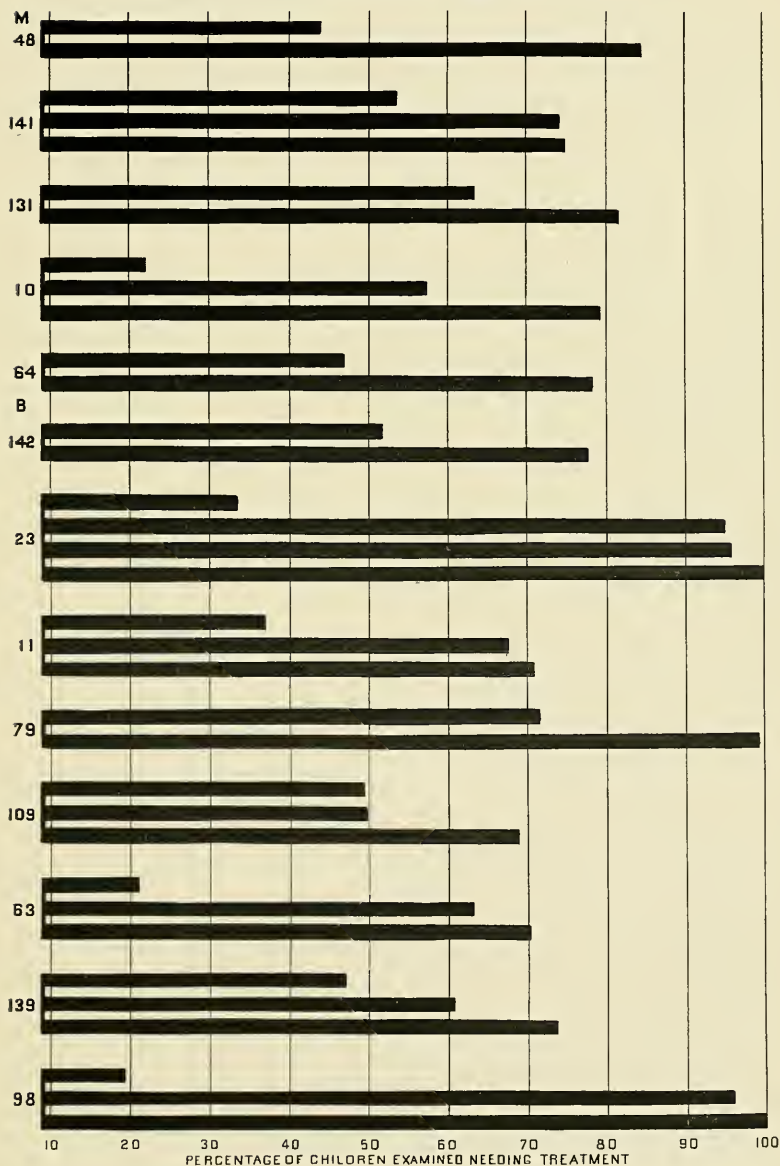
exist or which are too trivial to warrant notice. In order to prove the work of the department's inspectors in this respect, several tests were applied. For the two largest boroughs, Manhattan and Brooklyn, a chart was made showing for the period Sept. 1, 1907 to Jan. 31, 1908, the total examinations by each inspector and the number and percentage reported by him to be defective. The results showed **among inspectors a wide variation in percentages found defective, from 100% to 32% in Manhattan, and from 100% to 18% in Brooklyn** (Diagrams 1 and 2; Supplementary Tables 1 and 2). Of this variation a part was, of course, attributable to actual differences among the children examined. That such differences could be so great, however, was hardly to be believed.

The next step, therefore, was to select certain schools where more than one inspector had made examinations during the period. It was assumed that conditions in each school are nearly uniform, and that therefore any considerable variations in reports must be due to variations in the inspectors' methods. A chart similar to the former was drawn (Diagram 3; Supplementary Table 3), from which it appeared that discrepancies as great as between 32% and 92% and between 43% and 84% occurred in the same schools. In other words, **two inspectors examining different children in the same school reported results differing by 100%.**

Not only in the total number of children needing treatment, but in the kind of defects found is there room for variation, some inspectors tending to find one or two particular defects, other inspectors to find other defects. To discover the extent to which this might be the case, one hundred consecutive cards were taken at random from the file of each inspector and a chart was prepared showing for each inspector the number of instances reported of each kind of defect (Diagram 4; Supplementary Table 4). As may be observed, **some inspectors found a few instances of many defects, some found many instances of a few defects, while others found instances in abundance of the whole list of defects.**



DIAGRAM 3 - SHOWING VARIATIONS AMONG MEDICAL INSPECTORS  
IN THE SAME SCHOOL IN FINDING PHYSICAL DEFECTS  
SELECTED SCHOOLS - MANHATTAN AND BROOKLYN









All of these statements were based on the regular records of the department. To complete the case, the department was requested to assign special inspectors for the purpose of re-examining children who had first been examined by the regular school inspector. The work of 15 inspectors in 15 schools was thus tested, an average of 20 children being re-examined for each. A glance at the following columns reveals the discrepancies already mentioned, with one additional—in the **individuals** reported defective, even when the **number** so reported was nearly in agreement:

*Table 2*

## VARIATIONS AMONG MEDICAL INSPECTORS IN FINDING PHYSICAL DEFECTS

### Re-examination of the Same Children

Defects	Original inspector	Found by Special inspector	Individuals on whom inspectors were agreed
Malnutrition .....	28	10	10
Anaemia .....	22	11	7
Enlarged glands .....	119	126	84
Nervous disease .....	4	1	1
Cardiac disease .....	5	8	4
Pulmonary disease .....	13	2	2
Skin disease .....	10	7	3
Orthopedic defect .....	9	12	5
Defective vision .....	72	101	51
Defective hearing .....	6	9	2
Defective nasal breathing..	34	20	15
Defective palate .....	22	16	14
Defective teeth .....	161	206	147
Hypertrophied tonsils .....	107	127	80
Adenoids .....	70	96	49

The conclusion was therefore unavoidable that **physical examinations as conducted have been far from uniform and that some plan must be devised for standardizing them.** It is of course to be expected that diagnoses will disagree to some extent even in the face of effort to the contrary; but this disagreement must be confined within as narrow limits as possible if the department's reports and notifications are to have a reputation for reliability.



Treatment  
provided

For causing treatment to be provided when needed, the department has relied, as has already been stated, upon a postal card notification to parents.

This card has been in the following form:

“The parent or guardian of.....is hereby informed that a physical examination of this child seems to show an abnormal condition of the

.....  
Remarks: .....

Take this card to your family physician for treatment and advice.”

The chief evidence as to the extent and kind of the treatment actually provided in consequence of these notifications is afforded by the replies which the physicians who have been consulted are requested to return to the department of health. From nearly 65,000 notifications sent between Sept. 1, 1907, and Jan. 31, 1908, in Manhattan (where the system had been longest in operation) about 5,500 replies were received, or 8.5% of the possible number; in Brooklyn, of 53,000 notifications, 7.6% were heard from.

An examination was made of over 1,500 replies to ascertain what kind of information they present. From less than 5% was it possible to determine whether operative treatment was actually given or only advised. Similarly, from only 8% could it be learned that medical treatment was actually given.

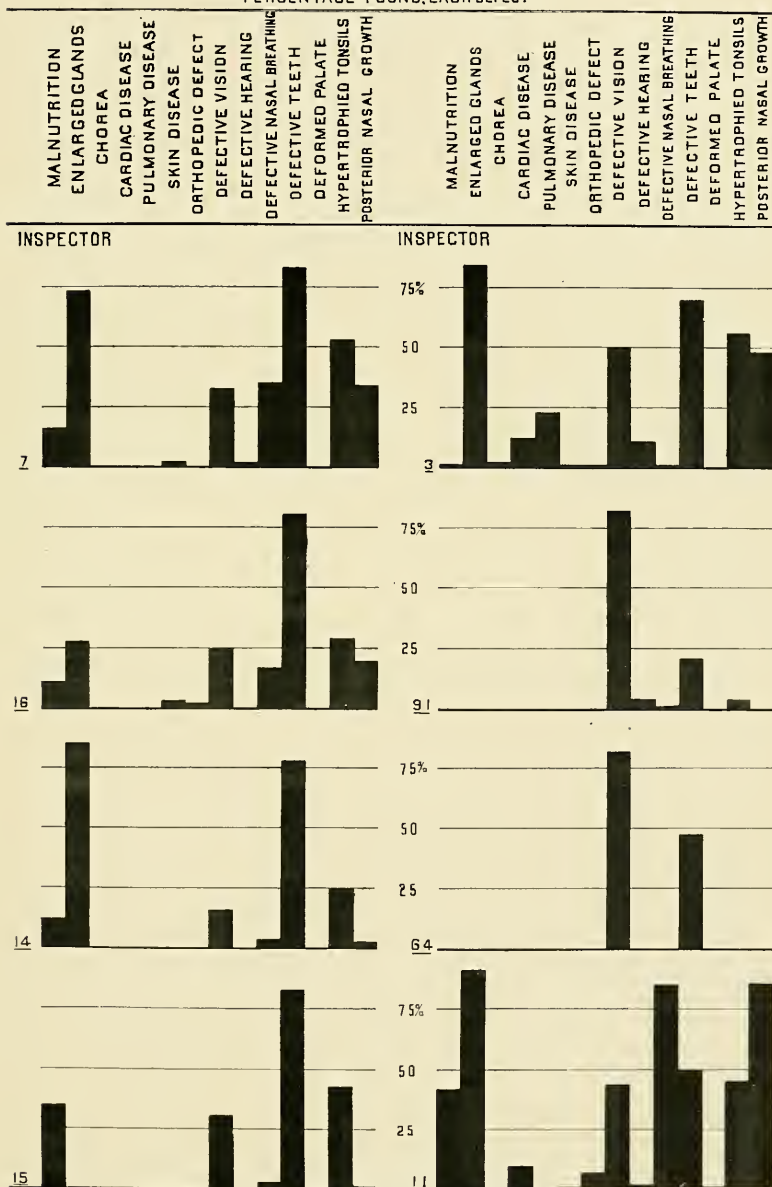
It is of course not to be supposed that this 7% or 8% represented the total number of children who came under a physician's care, nor that only 13% of those who did consult a physician were actually treated. It is clear, however, that the method prevailing hitherto is one which leaves the department in ignorance of results as to over 90% of the cases dealt with.

The conclusions of the study were therefore (a) that means must be found for standardizing the physical examinations, and (b) that a follow-up system must be devised for securing treatment in all possible cases.



DIAGRAM 4 - SHOWING VARIATIONS AMONG MEDICAL INSPECTORS  
IN THE DEFECTS FOUND

PERCENTAGE FOUND, EACH DEFECT\*



\* See Supplementary Table 4







## An Experiment

**Plan  
of the  
experiment**

In order to test the possibilities of a thorough follow-up system based upon persuasion and personal interviews, the department of health provided for an experiment covering the last six weeks of the school year 1907-08. Three schools were chosen in different parts of Manhattan, with different nationalities predominant. To each was assigned an inspector and a nurse especially selected for their fitness. Though the numbers are not large, less than 1,500 being examined, it has been thought worth while to present in considerable detail the records of the experiment. Where numbers are too small to warrant conclusions, they may serve to raise questions. Several statements are interesting for what they do not show. Where statements appear inconclusive, the form is presented as one which may be employed when more data are available. Each inspector examined about 15 children a day, the total examined by each and by all together being shown in the following table:

*Table 3*

### NUMBER OF CHILDREN EXAMINED

#### By Schools

School number and location	Prevailing nationality	Grades in which children were examined	Number examined
No. 141 462 West 58th St.	Irish	2,3,4,5	468
No. 160 Rivington and Suffolk Sts.	Jewish	1,2,3	516
No. 168 104th and 105th Sts. near 2nd Ave.	Italian	2,3	458
Total number examined			1,442

These children were not selected; in nearly every instance, each class was completed before another was begun.



Children were found to need treatment as follows:

Children	In School No. 141	88%
needing	In School No. 160	98%
treatment	In School No. 168	92%

The percentages are startlingly high. How far these children may be typical of the school children of the city is, of course, impossible to say. It is sufficiently serious, however, that in **any three schools** in the city, **from 88% to 98%** of nearly 1,500 children as found in the classes are declared to be **in need of treatment**. The most important defects needing treatment were those of vision (42%), nasal breathing (59%), hypertrophied tonsils (39%), anaemia (15%), and teeth (73 %).

The reports were tabulated in the form shown in Diagram 5, in order to disclose any divergences that might exist between the sexes or between grades, ages, or normal age and over-age children. Owing to their size, the tables are not published; detailed information, however, will be gladly furnished on request. The more noticeable points are presented here. School No. 160 was reported to have more defective children and more defects per child than the others, and seems to show an especially high number of enlarged tonsils (59.4%). In Schools No. 160 and No. 168, many children were found with defective nasal breathing (71.3% : 75.7%) and defective vision (44.5% : 50.6%). In a single school, No. 160, there appeared to be a considerable difference between the sexes with respect to anaemia, there being 10% among the boys and 20% among the girls; in all schools together, the figures are 13% for boys and 18% for girls. In other respects, however, there appeared no marked preponderance on the part of either sex. Taking into consideration all defects, there seemed to be a slight decrease in the number of defects in the older children. This may have been partially due to the replacement of defective first teeth by sound permanent teeth; it is possible also that treatment may have been provided for the older children. As for grade, defective vision, nasal breathing and hypertrophied tonsils were slightly more frequent in the lower grades.

A tabulation was also made (Table 5) of normal age and over-age children, by ages. Contrary to expectation, little difference was discovered between the groups; the numbers, however, are too small to yield any reliable conclusions. The



Table 4

# CHILDREN EXAMINED AND FOUND NEEDING TREATMENT

Summary by School, Age, Grade, Sex and Defects

School, age, grade, sex				Num- ber ex- amined	Needing treatment		Defects needing treatment	
					No.	%	Total	Average per child needing treatment
All ages	{ All grades	{ Both sexes	School					
			141	468	412	88.0	879	2.13
			160	516	508	98.4	1469	2.89
			168	458	425	92.7	1110	2.61
All schools	{ All grades	{ Both sexes	Age <sup>1</sup>					
			6	11	11	100.0	31	2.81
			7	120	115	95.8	334	2.90
			8	366	350	95.6	946	2.70
			9	409	385	94.1	1009	2.62
			10	254	235	92.5	567	2.41
			11	142	132	92.9	311	2.35
			12	81	69	85.1	147	2.13
			13	40	33	82.5	79	2.39
			14	16	12	75.0	31	2.58
			15	3	3	100.0	3	1.00
			All schools	{ All ages	{ Both sexes	Grade		
1B	71	71				100.0	231	3.25
2A	261	253				96.9	757	2.99
2B	447	418				95.5	1076	2.57
3A	410	389				94.8	945	2.42
3B	137	114				83.2	242	2.12
4A	108	92				85.1	194	2.10
All schools	{ All ages	{ All grades	5A	8	8	100.0	13	1.62
			Sex					
			Males	833	784	94.1	2031	2.59
			Females	609	561	92.1	1427	2.54
Total				1442	1345	93.2	3458	2.57

<sup>1</sup> At last birthday



# CHILDREN EXAMINED AND FOUND NEEDING TREATMENT—Continued

Number and percentage of children found needing treatment for each defect

Defective vision		Defective hearing		Defective nasal breathing <sup>2</sup>		Hypertrophied tonsils		Enlarged glands		Pulmonary disease		Cardiac disease	
No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>
144	30.7	6	4.2	138	29.4	116	24.7			1	0.2	12	2.5
230	44.5			368	71.3	307	59.4					22	4.2
232	50.6	5	1.0	347	75.7	144	31.4	3	0.6	2	0.4	2	0.4
4	36.3												
59	49.1	2	1.6	8	72.7	8	72.7					1	0.8
156	42.6			95	79.1	56	46.6					12	3.2
180	44.0	3	0.7	253	69.1	150	40.9	2	0.5			7	1.7
99	38.9	4	1.5	247	60.3	170	41.5	1	0.2	3	0.7	5	1.9
62	43.6	1	0.7	130	51.1	94	37.0					5	3.5
26	32.0			63	44.3	44	30.9					3	9.7
15	37.5			33	40.7	24	28.6					2	5.0
5	31.2	1	6.2	17	42.5	15	37.5					1	6.2
				7	43.7	6	37.5						
31	43.6			64	90.1	56	78.8					4	5.6
129	49.4	4	1.5	223	85.4	141	54.0					6	2.2
187	41.8	1	0.2	281	62.8	165	36.9					13	2.9
188	45.8	2	0.4	207	50.4	144	35.1	3	0.7	1	0.2	5	1.2
34	24.8	2	1.4	48	35.0	35	25.5			2	0.4	4	2.9
35	32.4	2	1.8	29	26.8	24	22.2					4	3.7
2	25.0			1	12.5	2	25.0						
333	39.9	7	0.8	521	62.5	337	40.4					22	2.6
213	44.8	4	0.6	332	54.5	230	37.7	2	0.2	3	0.3	14	2.2
606	42.0	11	0.7	853	59.1	567	39.3	3	0.2	3	0.2	36	2.4

<sup>1</sup>Based on number examined

<sup>2</sup>Including adenoids



# CHILDREN EXAMINED AND FOUND NEEDING TREATMENT—Continued

Number and percentage of children found needing treatment for each defect

Nervous disease		Orthopedic defect		Anaemia		Malnutrition		Defective teeth		Defective palate	
No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>	No.	% <sup>1</sup>
1	0.2	42	8.9	77	46.4	21	4.4	318	67.9	3	0.6
6	1.3	2	0.3	71	43.7	7	1.3	456	88.3	6	1.1
		5	1.0	75	46.3	1	0.2	288	62.8		
1	0.2	1	0.8	19	45.8	2	1.6	11	100.0	1	0.8
1	0.2	8	2.1	65	47.7	8	2.1	98	81.6	2	0.5
2	0.7	17	4.1	60	44.6	5	1.2	289	78.9	3	0.7
3	2.1	12	4.7	36	44.1	9	3.5	312	76.2	1	0.3
		4	2.8	23	46.1	4	2.8	175	68.8	2	1.4
		3	3.7	12	44.8	1	1.2	100	70.4		
		3	7.5	4	10.0			45	55.5		
		1	6.2	4	25.0			23	37.5		
								6	37.5		
								3	100.0		
		1	0.3	6	8.4	1	1.4	69	97.1	1	0.3
		11	2.4	44	46.8	6	2.2	202	77.3	5	1.1
6	1.4	16	3.9	70	45.6	8	1.7	334	74.7	1	0.2
1	0.7	10	7.2	68	46.5	8	1.9	295	71.9	1	0.7
		11	10.1	22	46.0	6	4.3	79	57.6	1	0.9
				13	42.0			75	69.4	1	
								8	100.0		
6	0.7	32	3.8	111	43.3	19	2.2	632	75.8	6	0.7
1	0.1	17	2.7	112	48.3	10	1.6	430	70.6	3	0.4
7	0.4	49	3.3	223	45.4	29	2.0	1062	73.6	9	0.6

<sup>1</sup> Based on number examined



form of analysis is offered as a suggestion to others pursuing this line of inquiry.

The main positive fact appearing in relation to defects is that **from 88% to 98% of the children examined need treatment**,—a conclusion which reinforces the already urgent demand for attention to the physical condition of school children.

**Treatment** The main object of the experiment was to discover **how far treatment could be secured through the method of personal persuasion of parents**. It had been asserted that a large number of parents would resent interference and would refuse either to provide treatment or to allow it to be provided. This view was not shared by those directing the experiment; they believed that the principal obstacles to be overcome were ignorance or indifference, and that through patient, tactful explanation the great majority of parents could be made to see the reasonableness of treatment.

The general methods pursued were the following. The inspector continued to mail to parents the postal card notifications as previously, at the same time giving to the nurse the record of the physical examination, indicating what defects required treatment. Within a few days, she either visited the home or requested the parent to come to the school to consult with her. At this interview, having the child's record before her, she explained the nature of the defects from which the child was suffering and the necessity for having them treated. She then urged the parent to consult the family physician; where there was none, and the family claimed to be unable to pay a physician's fee, a dispensary was suggested. Where, owing to their occupation, the parents were unable even to take their children to a dispensary, the nurse obtained from the parent a written request to take the children herself.

The belief in the effectiveness of this method was justified by the result. **Only 4.2% of the total number of parents refused to act, while 81% of the total number of children needing treatment were actually treated for one or more defects**. That the latter figure was not between 90% and 95% was due to the lack of dispensary facilities available to school No. 168. Table 6 shows the results in detail. In two of the three











Table 6

### TREATMENT PROVIDED Summary by Schools

	School number						Total		
	141		160		168		No.	%	
Children needing treatment	412		508		425		1345		100
Children treated	371		469		255		1095		81.4
For all defects	227		385		60		672		49.9
For one or more defects	144		84		195		423		31.5
Children not treated	41		39		170		250		18.6
Pending	34		2		157		193		14.4
Refused	7		37		13		57		4.2
Defects needing treatment	879		1469		1110		3458		100
Defects treated	581		1222		365		2168		62.6
	Needing treatment	Treated	Needing treatment	Treated	Needing treatment	Treated	Needing treatment	Treated	%
Defective vision	144	85	230	170	232	31	606	286	47.1
Defective hearing	6	3			5		11	3	—
Defective nasal breathing	138	114	368	324	347	166	853	604	70.8
Hypertrophied tonsils	116	94	307	264	144	72	567	430	75.8
Enlarged glands					3		3		—
Pulmonary disease	1	.			2	1	3	1	—
Cardiac disease	12	9	22	14	2	1	36	24	—
Nervous disease	1	1			6		7	1	—
Orthopedic defect	42	22	2		5		49	22	—
Anaemia	77	42	71	62	75	28	223	132	59.2
Malnutrition	21	11	7	7	1		29	18	—
Defective teeth	318	200	456	381	238	66	1062	647	60.9
Defective palate	3		6				9		—



schools, over 90% of the children with defects received treatment; in one, 55% were treated for all defects; in the other, 75%. 31% in all schools who were treated for one or more defects were at the close of the experiment still awaiting treatment for other defects. Had it not been for inadequate facilities for treatment, the greater part of the 14% pending in all schools could have been treated, and the 31% partially treated could have been completely treated. Supplementary analyses of various aspects of the experiment were made, but are not of sufficient significance to warrant publication. Neither age, grade nor sex was distinguished for special ease or difficulty as to securing treatment. Of the total children treated, two-thirds of the medical cases came under private practitioners, while operative, dental and eye cases went largely to institutions (Table 7). **The tendency was in dental cases to extract teeth instead of to fill them** (Table 8). An interesting exception to this practice was found in a recently established dental clinic for one of the schools of the Children's Aid Society, where many of the children in School No. 141 were treated. **In this school, in only 18% of the cases cared for by institutions was extraction alone employed.**

Proof has been presented that treatment can be secured by the method of personal persuasion. It remains to show that the method is not prohibited by the amount of work involved. Tables 9 and 10 supply the evidence. Of the total children whose treatment followed in consequence of personal interviews, **about three fourths (58% - 79.9%) required but one personal interview**, and the average visits to those treated were only 1.4. **The net average result of a day's work by a nurse was the actual treatment of over five children, three of them completely, and two of them for one or more defects.** In other words, the cost in nurses' time of securing treatment was sixty cents per child. In interpreting these conclusions, it must be borne in mind that the experiment faced the difficulties of a new enterprise: plans had to be explained and arrangements made; much time was consumed in waiting at the dispensaries which would have been turned to account if facilities had been adequate; and the experiment lasted hardly long enough to establish a routine method of work. In spite of these facts, however, **it has been demonstrated that**



Diagram 5

# FORM IN WHICH REPORTS OF PHYSICAL EXAMINATIONS WERE TABULATED

Sex	Grade	Age	Number exam- ined	Children need- ing treatment		Defects needing treatment		Number and per cent of children needing treatment for each defect				Same for other defects
				Number	%	Total	Average per child needing treatment	Defective vision + <sup>1</sup> % <sup>3</sup> 0 <sup>2</sup> % <sup>3</sup>	Defective hearing + <sup>1</sup> % <sup>3</sup> 0 <sup>2</sup> % <sup>3</sup>			
Males	{	7	{	{	{	{	{	{	{	{	{	{
		8										
		9										
		10										
		11										
		12										
		13										
		14										
	Total	{	{	{	{	{	{	{	{	{	{	{
{	3 A	{	{	{	{	{	{	{	{	{	{	{
	3 B	{	{	{	{	{	{	{	{	{	{	{
	Total males	{	{	{	{	{	{	{	{	{	{	{
Females	{	Same form	{	{	{	{	{	{	{	{	{	{
Both sexes	{	Same form	{	{	{	{	{	{	{	{	{	{

<sup>1</sup> The sign + is used to mean "defect needing treatment"

<sup>2</sup> The sign 0 is used to mean "defect not needing treatment"

<sup>3</sup> Based on number examined







Table 7

# KIND OF TREATMENT PROVIDED: PRIVATE PRACTICE AND INSTITUTIONS

Kind of treatment	School number	Children treated	Treated by			
			Private physician, dentist or oculist		Hospital, dispensary or clinic	
			No.	%*	No.	%*
Medical	141	84	59	70.2	25	29.8
	160	171	108	63.2	63	36.8
	168	79	56	70.9	23	29.1
	Total	334	223	66.7	111	33.3
Surgical	141	110	4	3.7	106	96.3
	160	205	2	0.9	203	99.1
	168	128	1	0.7	127	99.3
	Total	443	7	1.6	436	98.4
Dental	141	200	72	36.0	128	64.0
	160	381	74	19.4	307	80.6
	168	66	12	18.1	54	81.9
	Total	647	158	24.4	489	75.6
Ocular	141	84	34	40.4	50	59.6
	160	170	37	21.7	133	78.3
	168	31	10	32.3	21	67.7
	Total	285	81	28.4	204	71.6

\*Based on children treated

Table 8

# DENTAL TREATMENT: EXTRACTIONS AND FILLINGS

Treated by	School number	Total children given dental treatment	Extractions		Fillings		Extractions and fillings	
			No.	%	No.	%	No.	%
Private dentist or physician	141	72	21	29.2	39	54.2	12	16.6
	160	74	69	93.2	4	5.4	1	1.4
	168	12	12	100.0	—	0.0	—	0.0
	Total	158	102	64.6	43	27.2	13	8.2
Dispensary or clinic	141	128	24	18.8	94	73.4	10	7.8
	160	307	306	99.7	1	0.3	—	0.0
	168	54	52	96.3	2	3.7	—	0.0
	Total	489	382	78.2	97	19.8	10	2.0
Total treated	141	200	45	22.5	133	66.5	22	11.0
	160	381	375	98.5	5	1.3	1	0.2
	168	66	64	97.0	2	3.0	—	0.0
	Total	647	484	74.8	140	21.6	23	3.6



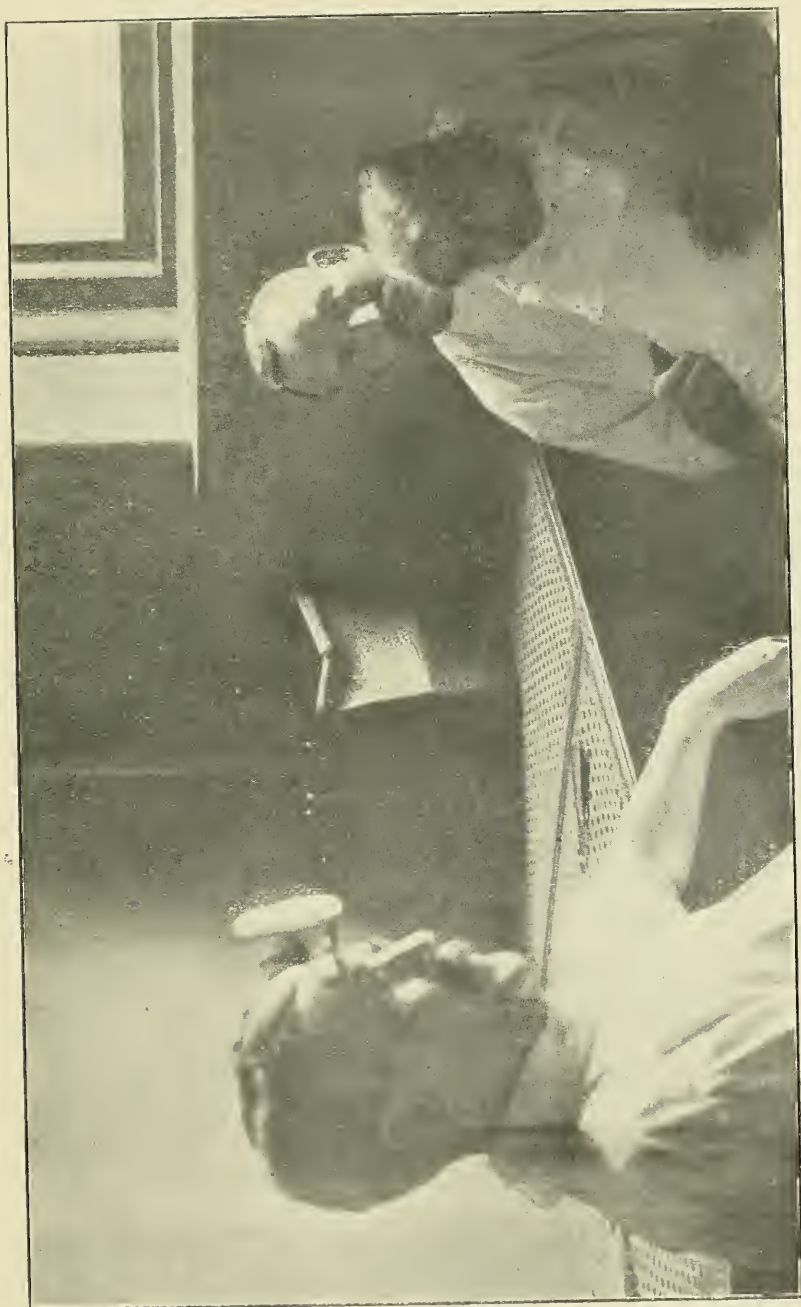
Table 9

## METHODS EMPLOYED TO BRING CHILDREN UNDER TREATMENT

NEED Children needing treatment	School No. 141 412		School No. 160 508		School No. 168 425		Total 1345	
	Number	Per cent.*	Number	Per cent.*	Number	Per cent.*	Number	Per cent.*
METHOD Parents notified by postal Parents personally interviewed One interview only At school At home Two interviews More than two interviews	412	100	508	100	425	100	1345	100
	412	100	493	97.0	413	97.1	1318	97.9
	254	61.6	360	70.8	311	73.1	925	68.6
	122	29.6	227	44.6	18	4.2	367	27.3
	132	32.0	133	26.2	293	68.9	558	41.3
SUCCESS Treated in consequence of postal notification Treated in consequence of personal interviews One interview only At school At home Two interviews More than two interviews Not treated; pending and refused Total	157	38.2	101	19.9	47	11.1	365	22.8
	1	0.2	32	6.3	55	12.9	88	6.5
	0	-	15	2.9	5	1.1	20	1.4
	371	90.0	454	89.3	250	58.9	1075	79.9
	254	61.6	333	65.5	202	47.6	789	58.7
WORK Postals issued Average per child needing treatment Parents interviewed at school Interviews Average per parent interviewed Parents visited Number of home visits Average per parent visited	122	29.6	209	41.1	7	1.7	338	25.1
	132	32.0	124	24.4	195	45.9	451	33.6
	1	0.2	27	5.3	22	5.2	50	3.7
	41	10.0	39	7.7	170	40.0	250	18.7
	412	100	508	100	425	100	1345	100
	412	100	508	100	425	100	1345	100
	1	-	1	-	1	-	1	-
	210	50.9	281	55.3	18	4.2	509	37.8
	210	50.9	281	55.3	18	4.2	509	37.8
	1	-	1	-	1	-	1	-
	290	70.3	266	52.3	395	92.9	951	70.7
	361	87.6	381	75.0	564	134.0	1306	97.2
	1.2	29.6	1.4	27.7	1.4	3.3	1.3	0.9

\*Based on total number of children needing treatment





Ready for Operation







Table 10

## AMOUNT OF WORK BY NURSES

	School number			Total
	141	160	168	
Children requiring attention of nurse	412	493	420	1325
Children treated through efforts of nurse	371	454	250	1075
Nurse days employed	67	60	67	194
Average children given attention per nurse day	6.1	8.2	6.2	6.8
<b>Average children treated per nurse day</b>	<b>5.5</b>	<b>7.5</b>	<b>3.7</b>	<b>5.5</b>
Home visits	361	381	564	1306
Dispensary visits	29	28	33	90
School visits	34	45	31	110
Visits of all kinds	424	454	628	1506
Average total visits per nurse day	6.3	7.5	9.3	7.7
<b>Average total visits per child treated</b>	<b>1.1</b>	<b>1.0</b>	<b>2.5</b>	<b>1.4</b>



treatment can be secured and that the amount of work or expenditure involved is not prohibitive.

**Conclusions**     The conclusion of the study and experiment described in the foregoing pages may be summed up in a few words:

- (1) The examination of about 1,500 unselected children, of whom from 88% to 98% were declared in need of treatment, argues that **the necessity for medical supervision of school children is more serious than has been supposed.**
- (2) **The obstacles to removing physical defects are not primarily those of unwillingness of parents.** Personal interviews and explanation by school nurses obtained action or permission from 95%.
- (3) **The cost of such a system is not prohibitive.** Three-fourths of the children, whose treatment was secured, required but one interview; the cost in nurses' salary was sixty cents per child treated, and this can be reduced.
- (4) **The most difficult problems are those relating to adequacy of facilities for treatment.** The treatment of children involves much work of a routine nature which has no particular interest for the average clinic physician. Whether working arrangements can be made with dispensaries and clinics for special attention to children remains to be seen. The dental care of school children has as yet received little attention in this country. With a single exception, the existing clinics provide for extraction, but for little or no filling.

No attempt has been made to solve the question of "free eye glasses" or "free meals". Both these questions require for their solution more data than have yet been gathered. To the necessary information, the experience of a staff of nurses in intimate contact with parents and homes of school children should yield a valuable contribution.





After Operation







## CARE OF BABIES

For many years the department of health has maintained a summer corps of medical inspectors or of medical inspectors and nurses for the purpose of diminishing the death rate of infants from diarrheal diseases. As the infant death rate from this cause reaches its maximum during the summer months, this work has been limited to that period. The method pursued in recent years has been to employ inspectors and nurses in a house to house and family to family inquiry for sick children under two years of age. When such were found, and there was no physician in attendance on the case, the department of health physician or nurse gave instruction or treatment, revisiting if necessary. In this way a considerable portion of the tenement sections was covered once during the summer.

The report for the summer of 1907 states that in New York City 175,272 families were visited, in which 44,130 children under two years of age were found. Among these, 1,783 cases of diarrheal disease were discovered, of which 688 were attended by the department's inspectors or nurses. Revisits were made to the number of 1,080. From this account it appears that on the average 4 families were visited to find 1 child; that of the children found, 1 out of 25 was sick at the time of visit; and that of the sick children, about three-fifths were already under the care of a private physician. The net result, in other words, of visiting 175,000 families seems to have been, according to the report, the caring for some 700 sick children, each being revisited on the average twice.

It is manifestly improbable, however, that such a statement presents a fair estimate of the results of the work performed. The circulars of instruction distributed year after year and the calls, infrequent though they were, by inspectors and nurses undoubtedly had some influence in directing the thought of mothers to the proper care of their babies.

Nevertheless the general method was open to a number of serious objections:

(1) The condition of babies undiscovered was entirely unknown to the department, the inspector or nurse being solely



dependent upon the chance of the mothers' being at home at the time of the call.

(2) As to the babies who were found, the chances were slight that the single visit usually paid by the inspector or nurse during the summer would coincide with the period of sickness.

(3) The limitation of the department's efforts to finding sick babies classed its work as mainly remedial rather than preventive. This consideration is most important in view of the frequently sudden onset of the disease.

(4) The administrative control over inspectors and nurses by the central office was much lessened by the latter's being obliged to accept the reports of the former as to children found in the first instance.

(5) In employing a large staff of inspectors and a small staff of nurses the prevailing plan did not secure the greatest economy of expenditure. Inspectors receiving \$100 a month for two or three hours of work a day and nurses receiving \$75 a month for twice that time were expected to perform practically the same duties. These duties, from their nature, belong essentially to nurses.

These and other considerations led the department of health to adopt a new plan for the summer of 1908. A larger staff of nurses and a smaller staff of inspectors were employed, the former for the routine work of visitation, the latter to care for sick children requiring a physician's attention.

To each nurse was furnished the reports of families in her district in which births had recently been reported to the bureau of records. These families were then visited for the purpose of instructing the mothers in proper care and feeding, no matter whether the babies were sick or well. The nurse was expected to continue her visits until she was ready to report a reasonable assurance that the instructions had been effective. When she discovered a child in need of medical care and not already attended, she reported it to the department, by telephone if necessary, and a medical inspector was sent. Record



was maintained in the central office of all such cases, as well as of cases referred by nurses to dispensaries or to other agencies. Lectures or talks of instruction, in many instances accompanied by actual demonstrations, were given by medical instructors at vacation schools, playgrounds for mothers and children, and recreation piers.

A noteworthy feature of the summer's program was the effort of the department of health to bring together in a single co-operative scheme all the agencies working to diminish infant sickness and mortality. At the call of the commissioner of health, early in the summer, representatives of the department of education and of over fifty hospitals, dispensaries and charitable agencies met and organized as a conference on the summer care of babies, with several working committees. In place of the many conflicting circulars of instruction previously distributed by various organizations in the city, a single card, attractively lithographed and simple in phraseology, was designed, and issued by the department of health. Being distributed by all the members of the conference, this card removed a considerable source of confusion in instructions. Plans were formulated for obviating duplication of service. Principally from the fact that the staff of the department of health was inadequate to carry out its program to the full extent originally contemplated, such duplication was not encountered to any considerable degree. A foundation was laid, however, for a closer permanent combination of forces.

Full reports of the summer's work are not yet available. The present returns show a decrease from 1907 of two hundred in the deaths of children under one year of age from diarrheal diseases. To what extent this may have been due to the summer campaign, to a better milk supply, or to other influences, it is difficult to say. It is not improbable that the increased attention given to the health of babies contributed to the result.

The summer's experience established the conviction:

(1) That the methods employed should be mainly preventive.



(2) That the fundamental preventive measure is the education of mothers in the proper care and feeding of their babies.

(3) That an educational campaign, to be fully effective, must not be limited to the summer months but must continue the year round.

(4) That the method of visitation pursued not only provides greater administrative control but presents the instruction at the time when most likely to be effective, i. e., soon after the birth of the child.

In accordance with these conclusions the department of health is planning to incorporate, as soon as possible, in its regular program of work the instruction of mothers of newborn babies.



## REORGANIZATION AND NEW PLANS

### Separate organization

Following upon the foregoing studies and experiments, the department of health has reorganized its service. At its meeting on August 19th, 1908, the board of health voted to establish a **division of child hygiene**, with one chief official for the entire city. The division is charged not only with the medical supervision of school children, including examination for both contagious diseases and non-contagious defects, but also the instruction of mothers in the care of new-born infants, the regulation of mid-wifery, the regulation of the boarding out of infants and the examination of children for employment permits.

### Standard- izing of service

The service of medical inspectors and nurses in the new division will be standardized by controlling records devised and already installed for that purpose, and by a system of supervising inspectors and nurses. From the records\*, the official in charge may see how many examinations each inspector is making daily and how many defects of each kind he is finding. Any unusual variation will be the cause for investigation by a supervisor. Supervisors will make periodical re-examinations of the work of each inspector, and the work of each inspector will be charted every month to reveal departures from uniformity. With each nurse, an account is kept in which she is charged with all cases reported by the inspector to need treatment, and is credited with all cases in which treatment has been provided. From this record the chief officer may read as often as he chooses the number of cases outstanding in the hands of each nurse for treatment. If this number increases from week to week, the nurse either has too much work or is inefficient; if it decreases, she may receive additional assignments. The number of visits, treatments and instructions also appears day by day, so that the amount of work performed is at once evident. The record is designed to systematize, in a form to facilitate administrative control, the reports of inspectors and nurses.

To supplement these, a form of report of supervising inspectors will present independent evidence from the field. It

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\* See Exhibit 1



will also be the business of the supervising inspectors and nurses to educate the inspectors and nurses to a higher standard of professional proficiency. It is not impossible that school inspection may assume a technical interest, similar to the service in clinics which confers added professional standing.

**A follow-up system** Finally, to secure actual treatment in as many cases as possible, the follow-up plan of the experiment has been adopted. Children reported by inspectors as needing treatment will be turned over to nurses, who will employ personal interviews with parents to urge treatment. No children once pronounced in need of treatment will be overlooked.

**Care of babies** Similar methods will be applied to the care of babies. This activity, hitherto limited to the summer months, will now, if provided for by appropriation, be maintained the year round. Each nurse will receive from the department office a record of the families in her district in which births have been reported. These are charged to her "case account" until she reports upon them. She is expected to visit and revisit until she has reason to believe that the mothers have learned the essentials of proper care of their babies. Sick babies are referred to inspectors when necessary.

**Other activities** Of the other activities included in the plan of the division, i. e., the regulation of the boarding out of babies, the regulation of midwifery and the physical examination of children applying for employment certificates, the first is the only one in which more than a beginning has been made. A permit is required in all cases, previous to the granting of which the home is inspected. Reinspections are made at intervals, or on complaint; permits are revoked when regulations are not complied with.



## **FORMS OF OPERATIVE REPORT AND RECORD DEVISED FOR THE BUREAU OF CHILD HYGIENE**

The record-keeping of the work of school inspection during the second quarter of 1908 involved the provision for recording by the central office of over two million separate items, and of a much greater number by the inspectors and nurses in the schools. In the coming year the work of record-keeping must not only keep pace with an increased field force, but will be complicated by a demand for more detailed statistics of the results of physical examinations.

The records of this division must serve a two-fold purpose. They must furnish (1) statistical data, and (2) data for the supervision of the force of inspectors and nurses.

In form, they must be simple, in order (1) to reduce to a minimum the clerical work of inspectors and nurses, and (2) to eliminate, as far as possible, the chance of error both in original entry and in tabulation.

The following report and record forms have been devised:

### Reports from the field staff

Form 1: Physical examination record

Form 2: Inspector's daily report

Form 3: School index card

Form 4: Nurse's daily report

### Office records

Form 5: Physical examination tabulation sheet

Form 6: Physical examination control sheet

Form 7: Contagious diseases tabulation sheet

Form 8: Nurse's control and tabulation sheet

### Reports from the tabulating office

#### For supervision

Form 9: Weekly report of work performed by inspectors

Form 10: Weekly report of work performed by nurses

Form 11: Comparison of the percentages of individual defects found by inspectors



For statistics

Form 12: Weekly report to the sanitary superintendent of the department of health and to the city superintendent of schools. The same form is used for the published quarterly report.

### Form 1 **Physical Examination Record**

These records are bound in book form, each blank being separated by perforation into four cards, indicated for convenience as cards 1, 2, 3 and 4, counting from left to right. In order that the department of education may be furnished with a complete physical record of each child, these four cards form two pairs of duplicate records, one pair dealing with examination, the other with subsequent treatment.

On cards 3 and 4 the inspector marks with crosses on each side of the perforation the defects found that need treatment. On card 3 he makes such recommendations to the teacher or principal as will enable them to make the proper adjustment of seating, exercise, study, etc.

Cards 1 and 2 are designed for the nurse. On card 2 she finds the defects by their code number and such remarks as the inspector thinks necessary for her guidance in securing treatment for the child. On this card also, the nurse makes the record of her efforts to secure treatment. When her efforts have been successful or have met with absolute refusal of the parents to provide or to have provided the proper treatment, she takes the child to the inspector for re-examination and discharge. The inspector's signature after such re-examination relieves the nurse of further responsibility.

Card 1 is made out by the nurse only after she has secured treatment for the child. The card states the action taken, thus supplementing the facts recorded on card 3.

Card 4 is torn off and sent to the department of health by the inspector after the completion of the examination. Card 3 is given by the nurse to the principal. Card 2 is sent in by the nurse to the department of health af-















## DEPARTMENT OF HEALTH, CITY OF NEW YORK

## SCHOOL MEDICAL INSPECTOR: DAILY REPORT

[illegible][illegible]



CLASS-

[illegible]











## DEPARTMENT OF HEALTH, CITY OF NEW YORK

- DATE

—NURSE

SCHOOL NURSE: DAILY REPORT

[illegible]

## VISITS

[illegible]



ter the completion of the treatment it calls for. Card 1 is given by the nurse to the principal. If the child is found to have no defects, cards 1 and 2 are destroyed.

#### **Form 2 Inspector's Daily Report**

This card accounts for the time the inspector spends in school, the number of examinations he makes, the cases of contagious diseases he finds in school and the number of exclusions for such diseases.

On the back of the card are recorded the names and addresses of excluded and absent children visited by the inspector.

#### **Form 3 School Index Card**

On this card are found the records of the cases of eye and skin diseases which the inspector finds in his examinations. These cards are kept in the schools, arranged by classes; on them the nurse finds the names of the children whom she is required to instruct or treat. The card calls for the signature of the inspector to show that he has re-examined the children reported cured by the nurse.

When all cases on the card have been discharged by the inspector, the nurse makes a summary of the cases at the bottom of the card and sends it to the department of health for tabulation.

#### **Form 4 Nurse's Daily Report**

This card accounts for the time the nurse spends in school, the work she performs there and the number of visits made to parents and dispensaries.

#### **Form 5 Physical Examination Tabulation Sheet**

On this sheet are recorded the physical examinations of each inspector. The examination cards are tabulated daily under the following age groups: under 8, 8-9, 10-11, 12-13, 14 and over; differentiation being made for sex. The designation for the groups made on the sheet are: M. 1, 2, 3, 4, 5; F. 1, 2, 3, 4, 5.

To make possible rapid and accurate tabulation, pads of a convenient size have been designed, ruled like the spaces on the examination card.



### **Form 6   Physical Examination Control Sheet**

On this sheet are grouped the schools that form the district of one inspector. By noting the school number and name of the nurse or nurses working with inspectors, the control sheet fixes directly the responsibility for work performed. At the end of any desired period, the control sheet gives for each school the number of children examined, the number needing treatment, how many have been treated, how many are still pending and who is responsible for these.

### **Form 7   Contagious Diseases Tabulation Sheet**

To this sheet the totals on the inspector's daily report card are transferred. By placing the columns of the report card opposite the columns on the sheet, which is ruled in the same way as the report card, the totals may be copied on the sheet directly, thus almost entirely eliminating the possibility of error.

A daily scrutiny by the clerk in charge detects any danger centres, as shown by the increased number of cases reported by any inspector. To discover cases unreported by the inspector, comparison will be made with the general card index of cases reported to the division of contagious diseases.

### **Form 8   Nurse's Control and Tabulation Sheet**

By the method described in connection with Form 7, the daily reports of the nurses are tabulated on this sheet. To secure control over the number of cases treated and cured because of the nurse's attention, the summaries of the school index cards are also tabulated. At the end of the school term or at any time, the number of cases needing treatment as shown by the inspector's contagious disease sheet can be compared with the number of cases reported cured.

### **Forms 9 and 10   Weekly Reports of Work Performed by Inspectors and Nurses**

Forms 9 and 10 are designed for supervision and control over the inspectors and nurses. They are in the form of weekly reports made out by the clerk in charge of



### PHYSICAL EXAMINATIONS: TABULATION SHEET

Inspector

DATE	
Sex and age	
Number examined	
Number needing treatment	
Defective vision	
Defective hearing	
Defective nasal breathing	
Hypertrophied tonsils	
Tuberculous lymph nodes	
Pulmonary disease	
Cardiac disease	
Chorea	
Orthopedic defect	
Malnutrition	
Defective teeth	
Defective palate	

## PHYSICAL EXAMINATIONS: CONTROL SHEET

Inspector

School	Nurse	Assigned
"	"	"
"	"	"

## FROM EXAMINATION SLIPS

FROM NURSES' TREATMENT SLIPS:

[illegible]

## CONTAGIOUS DISEASES

School

Inspector

DATE	EXAMINATIONS	CASES						EXCLUSIONS																
		Trachoma	Pediculosis	Eye	Ringworm	Scabies	Impetigo	Favus	Molluscum contagiosum	Total	Diphtheria	Scarlet fever	Measles	Chicken pox	Pertussis	Mumps	Total	Trachoma	Pediculosis	Eye	Ringworm	Scabies	Impetigo	Favus

### NURSES' CONTROL AND TABULATION SHEET

School

Inspector

[illegible]







## WEEKLY REPORT OF THE WORK OF SCHOOL MEDICAL INSPECTORS

[illegible]

## WEEKLY REPORT OF THE WORK OF SCHOOL NURSES

[illegible]

### COMPARISON OF THE PERCENTAGES OF THE INDIVIDUAL DEFECTS FOUND BY INSPECTORS IN PHYSICAL EXAMINATIONS

[illegible]







**GENERAL CONTAGIOUS DISEASES: EXCLUSIONS**

	Diphtheria
	Scarlet fever
	Measles
	Chicken pox
	Pertussis
	Mumps
	Total

**EYE AND SKIN DISEASES**

	Trachoma
	Pediculosis
	Eye
	Ringworm
	Scabies
	Impetigo
	Favus
	Molluscum contagiosum
	Total

Cases found

Cases excluded

Cases reported cured

**PHYSICAL EXAMINATIONS FOR NON-CONTAGIOUS DEFECTS**

	Number examined
	Number needing treatment
	% of examined needing treatment
	Defective vision
	Defective hearing
	Defective nasal breathing
	Hypertrophied tonsils
	Tuberculous lymph nodes
	Pulmonary disease
	Cardiac disease
	Chorea
	Orthopedic defect
	Malnutrition
	Defective teeth
	Defective palate
	Number reported treated
	% of number needing treatment reported treated

Number of inspectors .....

Number of nurses .....







tabulation and are sent to the chief of the division, to the chief inspector of each borough and to each supervisor.

The names of the inspectors are arranged alphabetically under their supervisors; those of the nurses, under the inspectors with whom they work.

**Form 11 Comparison of the Percentages of Individual Defects Found by Inspectors**

Form 11 is designed to show the individual variations of the inspectors in finding children who need treatment, and the kind of defects. Periodical charts like Diagrams 1-4, based upon these forms, will assist the supervising officials to standardize the methods of physical examination.

**Form 12. Weekly Report to the Sanitary Superintendent of the Department of Health and to the City Superintendent of Schools**

This form gives the totals for each borough and for the whole city. It also serves for the quarterly statistical report with the change that the physical examinations are divided into the age and sex groups given on Form 5. The quarterly statistical reports will be prefixed with the following summary:

Number of public schools

Registration

Number of public schools under inspection

Registration

Number of other schools under inspection

Registration

Total number of schools under inspection

Registration

Number of inspectors on duty in schools

Number of nurses on duty in schools



*Exhibit 2*

Supplementary Table 1

**SHOWING VARIATIONS AMONG MEDICAL INSPECTORS  
IN FINDING PHYSICAL DEFECTS \***

**Manhattan—All Schools**

Inspector **	Examinations	Per cent needing treatment	Inspector **	Examinations	Per cent needing treatment	Inspector **	Examinations	Per cent needing treatment
1	36	100.0	50	670	80.1	99	249	66.3
2	418	99.7	51	466	80.0	100	760	66.0
3	419	97.6	52	456	79.8	101	952	65.9
4	731	97.4	53	164	79.7	102	570	65.8
5	310	96.8	54	670	79.4	103	245	65.3
6	272	95.9	55	630	79.2	104	757	65.1
7	592	93.7	56	282	78.3	105	968	64.9
8	78	93.6	57	702	78.3	106	971	64.5
9	821	93.5	58	519	78.1	107	555	63.9
10	489	93.2	59	649	77.8	108	703	63.8
11	343	93.1	60	472	77.5	109	735	63.1
12	751	92.6	61	1011	77.5	110	631	61.9
13	694	92.5	62	772	72.2	111	724	61.8
14	498	92.5	63	281	77.2	112	400	61.7
15	51	92.2	64	918	77.0	113	842	61.6
16	598	91.9	65	361	77.0	114	511	61.4
17	336	91.9	66	463	76.5	115	718	61.4
18	774	91.6	67	570	75.8	116	444	61.0
19	753	91.3	68	479	75.3	117	691	60.3
20	548	90.5	69	462	74.7	118	696	60.0
21	1018	89.3	70	816	74.7	119	708	60.0
22	179	88.2	71	1310	74.4	120	495	59.2
23	768	88.2	72	1034	74.3	121	126	58.7
24	302	88.0	73	363	74.1	122	895	57.6
25	66	87.9	74	840	73.8	123	864	57.4
26	536	86.9	75	770	73.6	124	515	57.0
27	1799	86.9	76	364	73.3	125	509	56.5
28	765	86.9	77	550	72.5	126	114	55.2
29	672	86.6	78	1007	72.2	127	352	54.8
30	1149	85.4	79	739	71.7	128	872	50.6
31	899	85.2	80	552	71.5	129	663	50.0
32	857	85.1	81	552	71.0	130	618	49.6
33	735	84.9	82	854	70.7	131	665	49.0
34	698	84.6	83	566	70.6	132	783	47.9
35	1000	84.5	84	622	70.5	133	682	44.7
36	280	84.3	85	379	70.4	134	466	44.6
37	986	84.2	86	929	69.9	135	513	43.7
38	493	84.1	87	1094	69.7	136	580	43.6
39	362	83.9	88	841	69.6	137	544	43.3
40	208	83.1	89	652	68.7	138	763	42.4
41	715	82.8	90	789	68.7	139	795	41.8
42	439	82.7	91	377	68.4	140	757	40.7
43	474	82.6	92	981	68.3	141	477	40.2
44	815	82.2	93	873	67.8	142	15	40.0
45	882	82.0	94	582	67.7	143	119	37.8
46	828	81.4	95	474	67.1	144	914	35.5
47	696	81.0	96	935	67.0	145	58	32.7
48	613	80.4	97	873	66.7			
49	761	80.4	98	117	66.6			

\* Total children examined in Manhattan, Sept. 1, 1907—Jan. 31, 1908; see Diagram 1

\*\* An arbitrary index number for the purposes of this report; the same in all tables and diagrams



# Supplementary Table 2

## SHOWING VARIATIONS AMONG MEDICAL INSPECTORS IN FINDING PHYSICAL DEFECTS \* Brooklyn—All Schools

Inspector **	Examinations	Per cent needing treatment	Inspector **	Examinations	Per cent needing treatment	Inspector **	Examinations	Per cent needing treatment
1	349	100.0	32	1499	80.4	63	917	67.0
2	767	99.0	33	205	80.4	64	1619	66.4
3	761	97.9	34	192	80.2	65	883	64.8
4	730	97.0	35	796	80.2	66	112	63.4
5	30	96.6	36	734	79.9	67	955	62.5
6	365	96.1	37	1251	79.5	68	725	62.3
7	845	95.5	38	140	79.3	69	150	61.4
8	651	95.1	39	905	79.1	70	2350	61.2
9	1040	94.7	40	1332	78.4	71	909	61.1
10	1174	94.5	41	892	78.0	72	907	60.6
11	566	92.7	42	269	78.0	73	1009	60.5
12	34	91.2	43	1246	77.7	74	552	60.2
13	966	90.3	44	2022	77.3	75	1163	60.1
14	279	90.3	45	530	77.2	76	409	59.2
15	1815	90.1	46	267	76.7	77	846	56.7
16	714	90.0	47	392	76.4	78	597	55.9
17	1505	90.0	48	194	76.4	79	906	53.7
18	337	89.0	49	309	75.0	80	1079	53.6
19	338	87.8	50	907	60.6	81	79	53.2
20	1306	87.4	51	985	73.9	82	819	52.2
21	1023	87.0	52	1609	73.8	83	2275	50.9
22	120	86.6	53	759	71.5	84	432	49.8
23	781	86.5	54	763	71.4	85	460	47.6
24	658	85.4	55	1254	70.8	86	833	47.2
25	1616	83.3	56	786	70.8	87	490	42.2
26	150	83.3	57	141	70.2	88	1261	40.4
27	702	83.0	58	658	69.8	89	505	39.2
28	826	82.8	59	368	69.6	90	635	33.4
29	776	81.8	60	1757	69.2	91	1458	30.8
30	846	81.4	61	960	68.6	92	406	24.4
31	1290	81.2	62	210	68.0	93	637	18.4

\* Total children examined in Brooklyn Sept. 1, 1907-Jan. 31, 1908; see Diagram 2

\*\* An arbitrary index number for the purposes of this report; the same in all tables and diagrams



Supplementary Table 3

**SHOWING VARIATIONS AMONG MEDICAL INSPECTORS  
IN FINDING PHYSICAL DEFECTS \***

**Manhattan and Brooklyn**

Public school	Inspector **	Examinations	Per cent needing treatment	Public school	Inspector **	Examinations	Per cent needing treatment
48	134	344	43.9	11	89	170	37.0
	101	262	84.3		75	210	67.6
141	101	456	53.3		56	766	70.6
	70	154	74.0	79	54	763	71.4
	24	32	75.0		15	295	99.3
131	108	703	63.5	109	74	221	49.4
	47	111	81.9		84	432	49.8
16	87	109	22.0		52	190	68.9
	103	42	57.1	63	93	545	21.3
	54	651	79.3		90	30	63.3
64	130	536	46.8		57	141	70.2
	44	196	78.0	139	86	833	47.2
142	85	124	51.6		82	109	60.6
	41	852	77.6		63	299	73.8
23	90	605	33.6	98	92	329	19.7
	41	20	95.0		13	78	96.2
	25	192	95.7		6	30	100.0
	39	20	100.0				

\* Variations among medical inspectors making examinations in the same school, Sept. 1, 1907—Jan. 31, 1908; see Diagram 3

\*\* An arbitrary index number for the purposes of this report; the same in all tables and diagrams



## SHOWING VARIATIONS AMONG MEDICAL INSPECTORS IN DEFECTS FOUND\*\*

Inspector ***	Public school	Ages	Malnutrition	Enlarged glands	Chorea	Cardiac disease	Pulmonary disease	Skin disease	Orthopedic defect	Defective vision	Defective hearing	Defective nasal breathing	Defective teeth	Deformed palate	Hypertrophied tonsils	Posterior nasal growth	Defective mentality
1	8	8-10	1	82	2	22	23	1	1	14	1	8	64		67	49	1
2	50	8-14		84		12	1			50		1	70		56	48	
3	27	8-13	16	71			1			57			65		47		
6	21	10-14	42	73				2		33		35	83		53	34	7
7	112	11-14	93	91		10		1	7	44		85	50	1	45	86	
11	3	10-13	12	85						16		4	78		23	3	
14	79	9-13	35					3	2	31		3	83		43	1	1
15	8	6-15	11	28				4	1	25		17	81		29	24	
16	17	11-14	21	1	1	1	2		1	20		27	54	1	19	23	
17	15	11-15	9	47					4	59		11	64	1	48	20	
18	6	10-14	1	85	1	4				22		2	70		35	2	
20	10	8-11	1	13				1	1	33		1	88		22	2	
25	148	10-14	2	68						9**		2	95		24	26	1
28	136	6-12	1	3						12		1	93		6	2	
31	72	7-14	27	46					1	32		3	61	4	49	11	
39	143	10-13		74						3		3	61		16		
43	46	6-14		3		1		1		43		3	73		31	3	
44	10	11-16		77	1			4		25		2	48		12	5	
46	106	12-14		67		1		7		23		4	78		32	1	
47	5	12-16	10	4		1				42		1	71		30	3	
52	28	12-16				2				24		3	73		30		
60	73	11-14	1	4		2				82		2	48		6	2	
64	1	7-15			1	2			1	14		5	82		20	2	
79	12	7-11	3	6				4	1	50		3	44		10	1	2
83	16	13-15	1			3		1		9		4	80		4		
89	11	6-11								82		4	21		4		
91	58	10-15										1					

\* From the physical record cards of defective children examined between Sept. 1, 1907, and Jan. 31, 1908, in Brooklyn; 100 by each inspector being tabulated in the order in which they appeared on file. No selection of any kind was made; see diagram 4

\*\* No eye tests for kindergarten children

\*\*\* An arbitrary index number for the purposes of this report; the same in all tables and diagrams





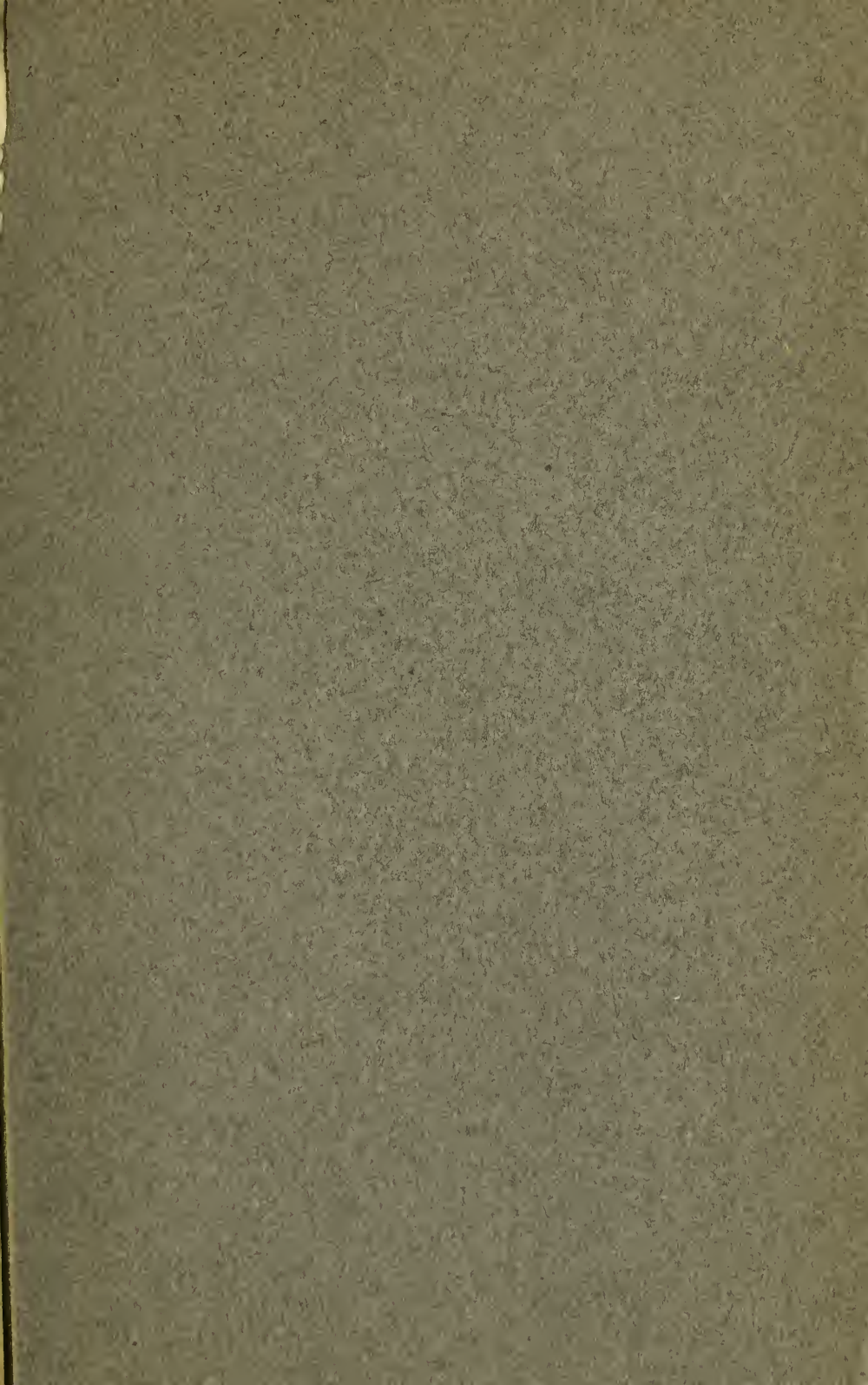














# BUREAU OF MUNICIPAL RESEARCH

## HISTORY

January 1st, 1906 Organized as "Bureau of City Betterment"

May 3rd, 1907 Incorporated as "Bureau of Municipal Research"

## PURPOSES

To promote efficient and economical municipal government; to promote the adoption of scientific methods of accounting and of reporting the details of municipal business, with a view to facilitating the work of public officials; to secure constructive publicity in matters pertaining to municipal problems; to collect, to classify, to analyze, to correlate, to interpret and to publish facts as to the administration of municipal government. (Articles of Incorporation)

## REPORTS, JANUARY, 1906 to AUGUST, 1908

Some Phases of the Work of the Department of Street Cleaning  
City Owned Houses

Salary Increases Not Provided for in Budget

Inefficiency of Inspection of Combustibles

The City of New York, the Street Railroad Companies and  
a Million and a Half Dollars

How Manhattan is Governed

Analysis of the Salary Expenditure of the Department of  
Health of the City of New York for the Year 1906

Making a Municipal Budget; Functional Accounts and Records  
for the Department of Health

New York City's Department of Finance

The Park Question, Part II, Critical Study and Constructive  
Suggestions Pertaining to Revenue and Deposits of the  
Department of Parks: Manhattan and Richmond

Memorandum of Matters Relating to New York City's Debt  
that Suggest the Necessity either for Judicial Ruling or  
for Legislation

## REPORTS IN PROGRESS, AUGUST, 1908

The Park Question, Part I, Critical Study and Constructive  
Suggestions Pertaining to Administrative and Accounting  
Methods of the Department of Parks: Manhattan and  
Richmond

Control of Water Revenues

Administration of Department of Water Supply, Gas and  
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